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DATA ANNOUNCEMENT BULLETIN

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NATIONAL SPACE SCIENCE DATA CENTER/
WORLD DATA CENTER A FOR ROCKETS AND SATELLITES

Code 601

Goddard Space Flight Center • Greenbelt, Maryland 20771

November 1982

AVAILABILITY OF IMP-J (IMP 8) INTERPLANETARY
FIELD AND PLASMA DATA FOR THE INTERNATIONAL
MAGNETOSPHERIC STUDY PERIOD (IMS)INTRODUCTION

One recommendation of the IMS Assessment Symposium, held at NSSDC in May of 1981, was that 5-min resolution composite interplanetary field and plasma data sets be generated and made available to the scientific community. The purpose of this *Data Announcement Bulletin* (DAB) is to announce the availability of such a data set of IMP-J (IMP 8) field and plasma data.

The data set was compiled by Joseph H. King of the Goddard Space Flight Center Laboratory for Extraterrestrial Physics, using data of that Laboratory and of the Massachusetts Institute of Technology. The magnetic field data are from the Goddard Space Flight Center magnetometer (P.I.: N. F. Ness), and the plasma data are from the Massachusetts Institute of Technology Faraday cup experiment (P.I.: H. S. Bridge). The plots and listings were generated by Charles A. Wallace of the NSSDC staff.

DATA SET MEDIA AND TIME COVERAGE

There are actually two data sets available, one on a single magnetic tape (NSSDC ID: 73-078A-02E) and one on microfiche (NSSDC ID: 73-078A-02F). The microfiche data set consists of 11 fiche of plots displaying a subset of 3 parameters from the tape, and 41 fiche of listings giving a larger subset of parameters from the tape.

The tape data set spans the period April 12, 1977, to May 24, 1980. The microfiche data set covers a shorter interval, ending December 31, 1979. This covers a period from shortly before launch of the IMS-dedicated spacecraft, the ESA-GEOS 1 synchronous orbit spacecraft of the European Space Agency, through the end of the IMS data acquisition phase (December 31, 1979) at which time IMP-J was in the solar wind. (Recall that in its ~ 35 Re, 12.5 day orbit, IMP-J spends 4-5 days per orbit out of the solar wind, in the Earth's magnetosheath and magnetotail regions.)

(NASA-TX-85226) AVAILABILITY OF IMP-J (IMP
8) INTERPLANETARY FIELD AND PLASMA DATA FOR
THE INTERNATIONAL MAGNETOSPHERIC STUDY
PERIOD (IMS) (NASA) 26 p HC AC3/MF A01

N83-19658

Unclas

CSCL 03A G3/89 02559

EXPECTED READER USE OF PLOTS, LISTINGS, AND TAPE

The purpose of the plots is to enable the reader to identify times when interplanetary variations are likely to have interesting magnetospheric effects. On the other hand, the purpose of the listings is to permit the reader to quantify the state of the interplanetary medium for previously identified interesting intervals of limited durations; either the listed parameters, or others readily computed therefrom, may be of interest. The purpose of the tape data set, in addition to being the source of the plots and listings data set, is to enable statistical studies and to enable the quantification of the interplanetary medium for individual intervals whose long duration renders working from the data listing inconvenient.

COMPILATION OF THE TAPE DATA SET

This merged data set was generated as follows. First a 5-min IMF tape was created. This tape contained 5-min averages of 15.36 s resolution field parameters for hours when, based on magnetic field data signatures, IMP-J was judged to be beyond the Earth's bow shock for the entire hour. Plasma parameters, averaged at MIT over ~ 1-2 min resolution, were taken from an MIT-supplied tape for the times of the IMF records, and were merged onto the IMF tape. The resulting tape is available to the scientific community from NSSDC. Its format is shown in Appendix A. Note that in addition to basic field and plasma data, information is given on magnetic connectivity between IMP-J and the Earth's bow shock. There are field data in all records (whose number, 136325, represents a 42% overall data coverage between the first and last times), and there are plasma data in 79% of the records. This tape was used to generate the associated plots and listings data set.

DESCRIPTION OF PLOTS

Rather than plot each of several interplanetary parameters, computed parameters for each of two basically different ways the solar wind affects the magnetosphere are displayed. Sample plots are shown in Appendix B. Interplanetary pressure variations are responsible for large scale magnetospheric compressions and relaxations. For example, shock associated interplanetary pressure enhancements cause rapid magnetospheric compressions recorded at the Earth's surface as geomagnetic storm sudden commencements. One parameter plotted is interplanetary pressure, kNv^2 . After computing pressure in units of dynes/cm² (N in cm⁻³, v in km/s, $k = 1.67 \times 10^{-14}$), it is plotted logarithmically on a scale from 1 to 100. Because of the neglect of heavier nuclei, pressures are underestimated by typically 20%. It should be noted that the magnetopause standoff distance is proportional to the sixth root of the solar wind pressure.

The other mode of interaction between the solar wind and the magnetosphere is electrodynamic. Many studies have shown that this interaction depends on solar wind speed and on the intensity and orientation of the IMF. The more nearly antiparallel the IMF and geomagnetic fields are in their interaction region, the stronger the interaction. However, the details of the interaction mechanism, and hence the most appropriate combination of interplanetary parameters, are problems on which a consensus has not yet been reached. For

example, since 1978 Akasofu and coworkers have advocated $\epsilon = l_0^2 V B^2 \sin^4 (\theta/2)$ as the most appropriate parameter, where V , B , θ , and l_0 are flow speed, magnetic field intensity, polar angle of the Y-Z projection of the IMF vector, and an empirically determined effective magnetospheric cross-sectional radius. However the simple product $B_z \cdot V$ (B_z in GSM coordinates), which is proportional to the y component of the solar wind convection electric field, has been used for a yet longer period and continues to be favored by many.

Both ϵ and $B_z \cdot V$ were plotted on the same panel. ϵ was computed in units of ergs/s, after which ϵ (ergs/s)/ 3.2×10^{17} was plotted logarithmically from 1 to 100. $B_z \cdot V$ was computed in units of volts/m [$3 \times 10^4 \times B_z$ (nT) $\times V$ (km/s)/c (3×10^{10} cm/s)], after which $-B_z \cdot V$ (volts/m) $\times 10^4$ was plotted logarithmically from 1 to 100. These scales were chosen to yield profiles only when the solar-wind-to-magnetosphere energy transfer is expected to be very significant ($B_z \cdot V < 0$, $\epsilon > 3.2 \times 10^{17}$). It may be observed that these two parameters generally track each other well. Since most ~ 5 min scale variations in these parameters follow from field variations rather than flow speed variations, mean speeds (400 km/s) were used for those 5-min records having field data but no plasma data. On the plots, such times are identifiable by the presence of ϵ and $B_z \cdot V$ traces and the absence of a simultaneous pressure trace. In order to avoid the ambiguity between data gaps and off-scale parameter values, off-scale values have been plotted near the bottom or top of the appropriate panel.

DESCRIPTIONS OF DATA LISTINGS

The data listings provide the basic field and plasma parameters, as well as, the computed, plotted parameters. A partial listing is shown in Appendix C. Field parameters include the average field magnitude, Cartesian components in solar magnetospheric coordinates, and the vector standard deviation--i.e. $(\sigma_x^2 + \sigma_y^2 + \sigma_z^2)^{1/2}$ --and the field azimuth angle. Plasma parameters include the bulk flow speed (km/s), proton density (cm^{-3}), proton temperature (deg K, times 10^{-3}), and the flow longitude and latitude angles (deg). These angles are positive for flow from west and from south of the sun, respectively. In preparing this data compilation, it was noted that the flow latitude angle became increasingly positive with time. Over the 1975-1980 period, the trend could be reasonably fit with the linear equation: $\text{Theta (deg)} = 0.25 + 1.125 \cdot T$, where T is fractional years since 1975.0. In consultation with MIT personnel, this trend was attributed to instrumental effects, and it was subtracted from the MIT-supplied data before generating the composite field/plasma tape and listing therefrom.

The computed parameters listed are pressure (dynes/cm², times 10^{-9}), ϵ (ergs/s, times 10^{-16}), and $B_z \cdot V$ (nT \cdot km/s). Note that between the plots and listings, ϵ involves a different normalization factor (3.2×10^{17} vs 10^{16}), and $B_z \cdot V$ involves different units (volts/m vs. nT \cdot km/s; 1 volt/m = 10^6 nT \cdot km/s). As noted above, $V = 400$ km/s was assumed in computing both ϵ and $B_z \cdot V$ for records having field data but no plasma data.

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ORDERING INFORMATION

When making inquiries about the data, please refer to the NSSDC IDs:

73-078A-02E for the tape data set
73-078A-02F for the microfiche data set

Researchers residing in the United States should direct inquiries to

National Space Science Data Center
Code 601.4
Goddard Space Flight Center
Greenbelt, Maryland 20771
Telephone: (301) 344-6695
FTS: 344-6695

Researchers who reside outside the United States should direct inquiries to

World Data Center A for Rockets and Satellites
Code 601
Goddard Space Flight Center
Greenbelt, Maryland 20771, U.S.A.
Telephone: (301) 344-6695
Telex: NASCOM GBLT 89675

FORMAT OF 5-MIN RESOLUTION MERGED IMP-J IMF-PLASMA TAPE

This IMP-J tape contains 5-minute plasma parameter averages provided by MIT, 5-minute IMF averages computed from GSFC 15.36 sec data, and information on whether the 5-min IMF vector intersects the Earth's bow shock. Only times when IMP-J is in the solar wind are included. There are magnetic field data in every record. Some records have fill data (= 0.0) in the plasma words.

The tape is a 9-track, 1600-bpi, binary tape created on an IBM 3081 computer. The tape format is fixed block with a logical record length of 45 words (180 bytes), blocked 150 logical records per physical record. The physical record length is 6750 words (27,000 bytes). The last physical record on the tape may be short, but is an integer multiple of logical records.

The IBM JCL for the DCB parameter used to create the tape was:

NL, 9 TRACK, DEN=3, RECFM=FB, LRECL=180, BLKSIZE=27000

Format of logical data record:

word	type	data
1.	I*4	Year (77, 78, 79, 80)
2.	I*4	DDay (Jan 1 = Day 0)
3.	I*4	Minute of day at start of average (0, 5... 1435)
4.	I*4	Number of 1.28 s IMF values in 5-min <u>B</u> average (note that each 15.36 s average consists of up to 12 1.28 s values)
5.	I*4	Number of 15.36 s IMF values in <u>B</u> average
6.	I*4	Number of points in plasma parameter averages
7.	R*4	X_{GSM} } IMP-J position, km
8.	R*4	Y_{GSM} }
9.	R*4	Z_{GSM} }
10.	R*4	λ_s Geomagnetic Latitude of Sun (degree)
11.	R*4	$\langle B \rangle$ nT
12.	R*4	$\langle B_{X_{GSM}} \rangle$ nT

APPENDIX A (continued)

word	type	data
13.	R*4	$\langle B_{Y_{GSM}} \rangle : nT$
14.	R*4	$\langle B_{Z_{GSM}} \rangle nT$
15.	R*4	$(\langle B_X \rangle^2 + \langle B_Y \rangle^2 + \langle B_Z \rangle^2)^{1/2}$
16.	R*4	$\theta_{B_{GSM}}$ degrees (from $\langle B_X \rangle$, $\langle B_Y \rangle$, $\langle B_Z \rangle$)
17.	R*4	$\phi_{B_{GSM}}$ degrees (from $\langle B_X \rangle$, $\langle B_Y \rangle$)
18.	R*4	$\left. \begin{array}{l} \sigma_{B_X} \\ \sigma_{B_Y} \\ \sigma_{B_Z} \end{array} \right\} nT, \text{ in generation of 5-min averages from 15.36 s values}$
19.	R*4	
20.	R*4	
21.	R*4	$\{ \langle \sigma_x^2 + \sigma_y^2 + \sigma_z^2 \rangle \}^{1/2}$ these σ 's arise in the generation of 15.36 s averages from 1.28s values
22.	R*4	Maximum value of any of the σ 's contributing to word 21
23.	R*4	V , km/s (bulk flow speed)
24.	R*4	σ_V , km/s
25.	R*4	N , cm^{-3} (proton density)
26.	R*4	σ_N , cm^{-3}
27.	R*4	W , km/s (thermal speed)
28.	R*4	σ_W , km/s
29.	R*4	ϕ_V , degrees, flow azimuth (+ from west)
30.	R*4	σ_ϕ , degrees
31.	R*4	θ_V , degrees, flow latitude (+ from south)
32.	R*4	σ_θ , degrees
33.	R*4	Y_{GSE} (IMP-J position, km)
34.	R*4	Z_{GSE} (IMP-J position, km)

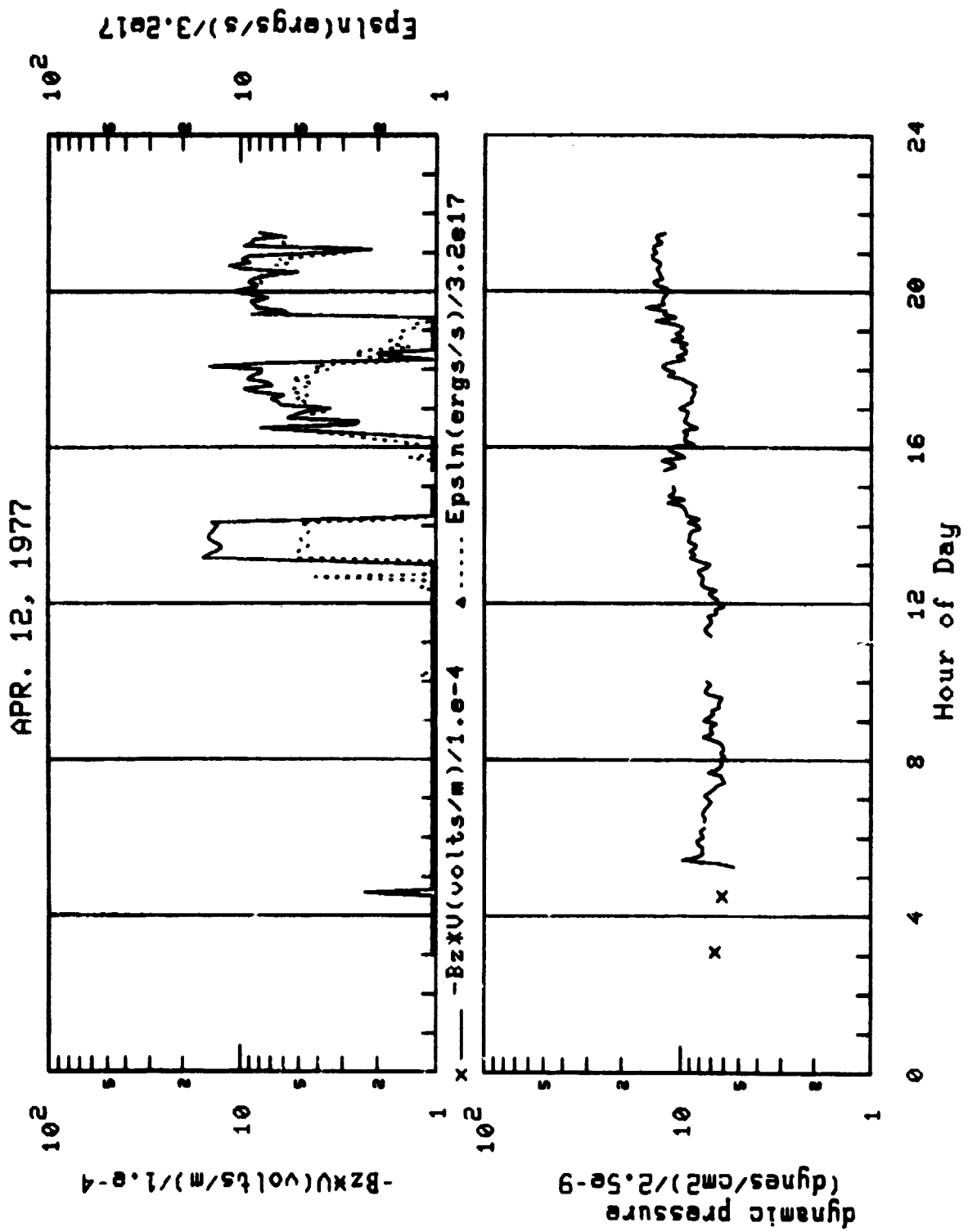
word	type	data
35.	R*4	$\langle B_{YGSE} \rangle$ nT
36.	R*4	$\langle B_{ZGSE} \rangle$ nT
37.	R*4	$\left. \begin{array}{l} X \\ Y \\ Z \end{array} \right\}$ km, in GSE, point of intersection between IMP line through IMP-J, and the bow shock (see footnote)
38.	R*4	
39.	R*4	
40.	R*4	Distance (km) along \underline{B} between IMP-J and bow shock intersection point
41.	R*4	Angle (in degrees) between \hat{B} and bow shock normal at intersection
42.	R*4	$B_Z \cdot V$ (nT x km/s)
43.	R*4	E (ergs/s) = $2 \times 10^{14} \times V \times B^2 \times \sin^4 \left(\frac{1}{2} \tan^{-1} \left(\frac{ B_{YGSM} }{B_{ZGSM}} \right) \right)$
44.	R*4	$1.67 \times 10^{-14} \times N \times V^2$, dynamic pressure in dynes/cm ²
45.		Spare

NOTES: In word 31 θ_v (on this tape) = θ_v (on MIT tape) - (.25 + 1.125T) deg where T is fractional years since 1975.0

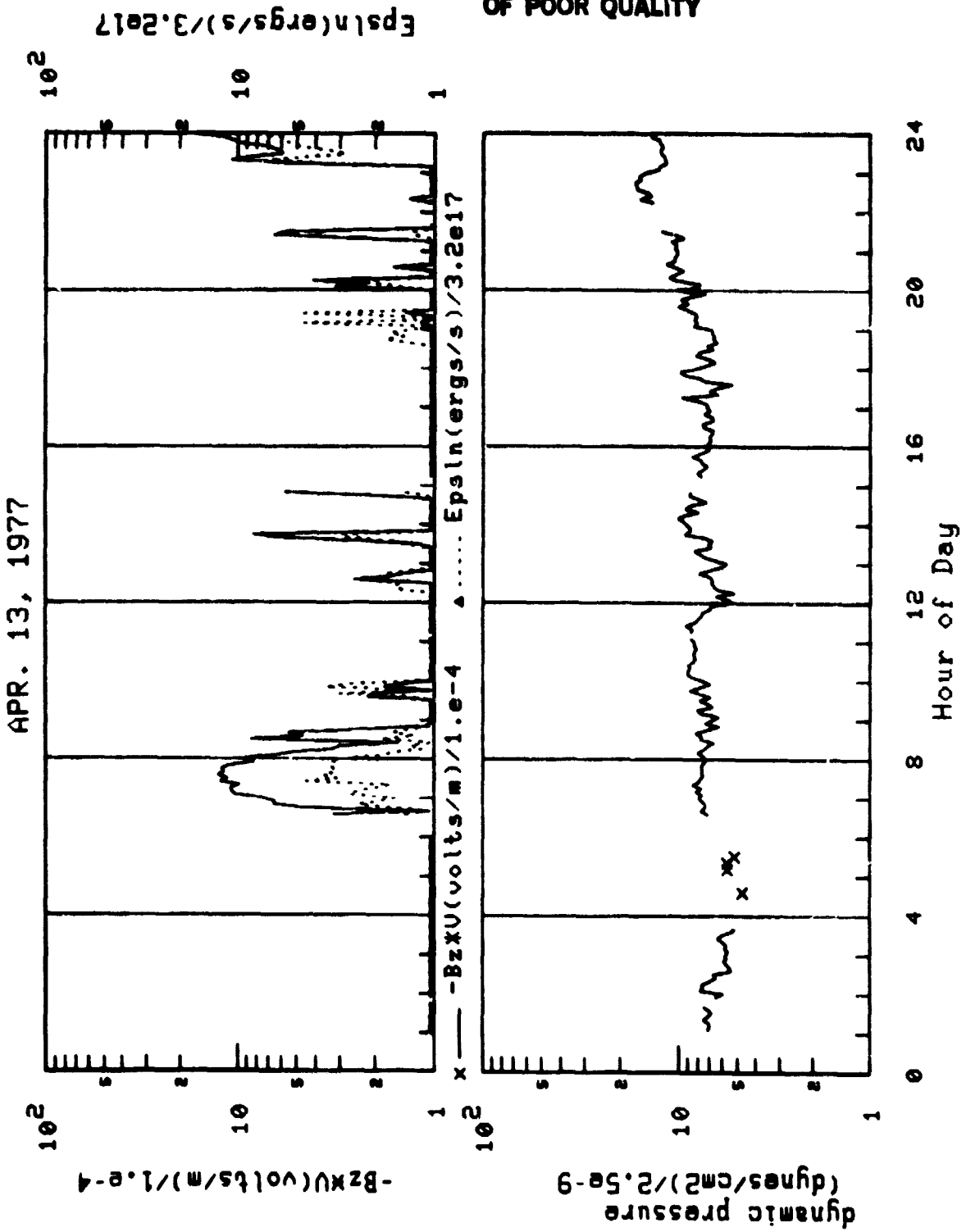
In words 42 and 43, $V = 400$ is used for records with no plasma data.

Words 37-41 = -999. for no-intersection cases. (Intersection calculations are based on a model bow shock - Fairfield, J. Geophys. Res., 76, 6700 - adjusted for simultaneously observed solar wind pressure when available.)

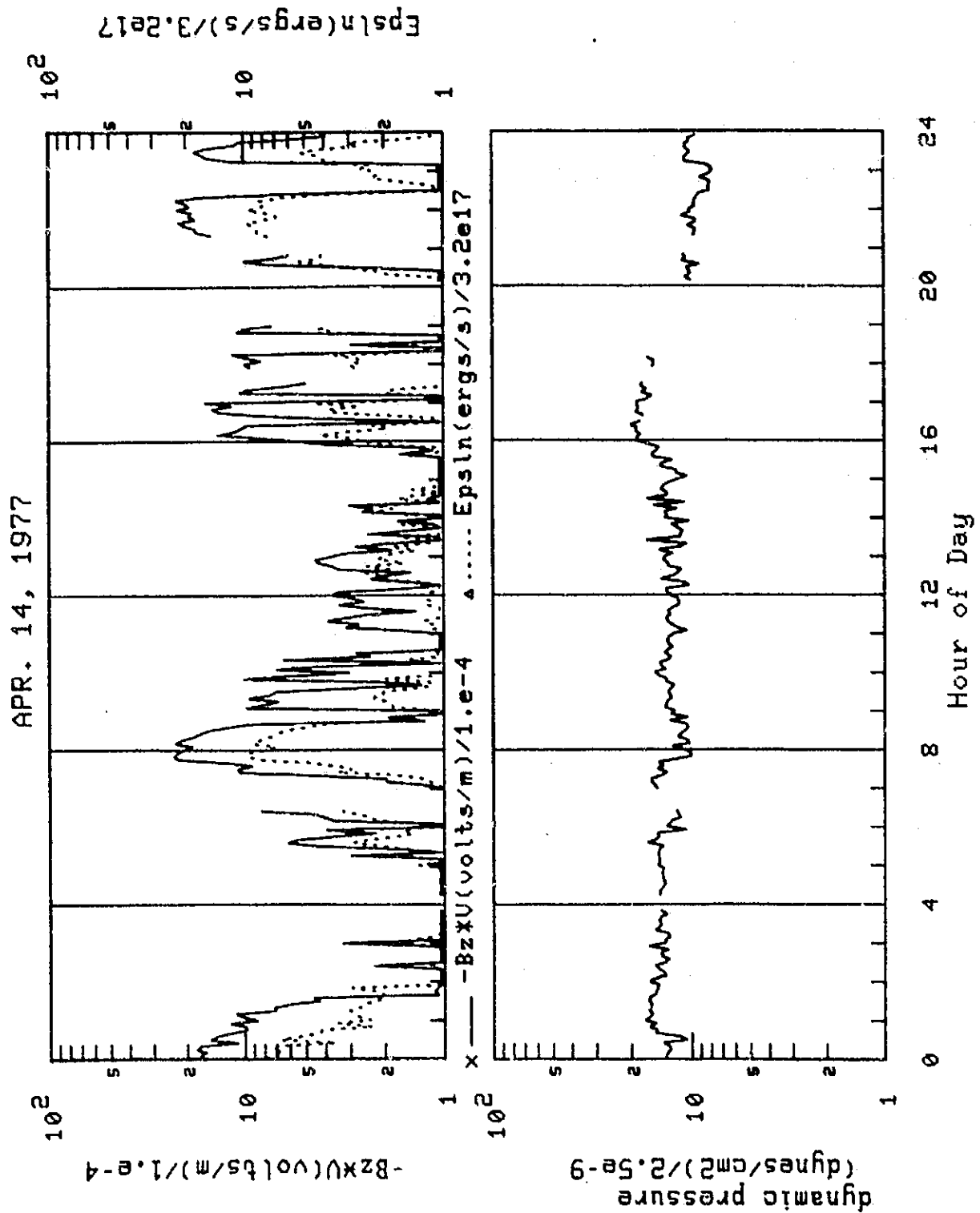
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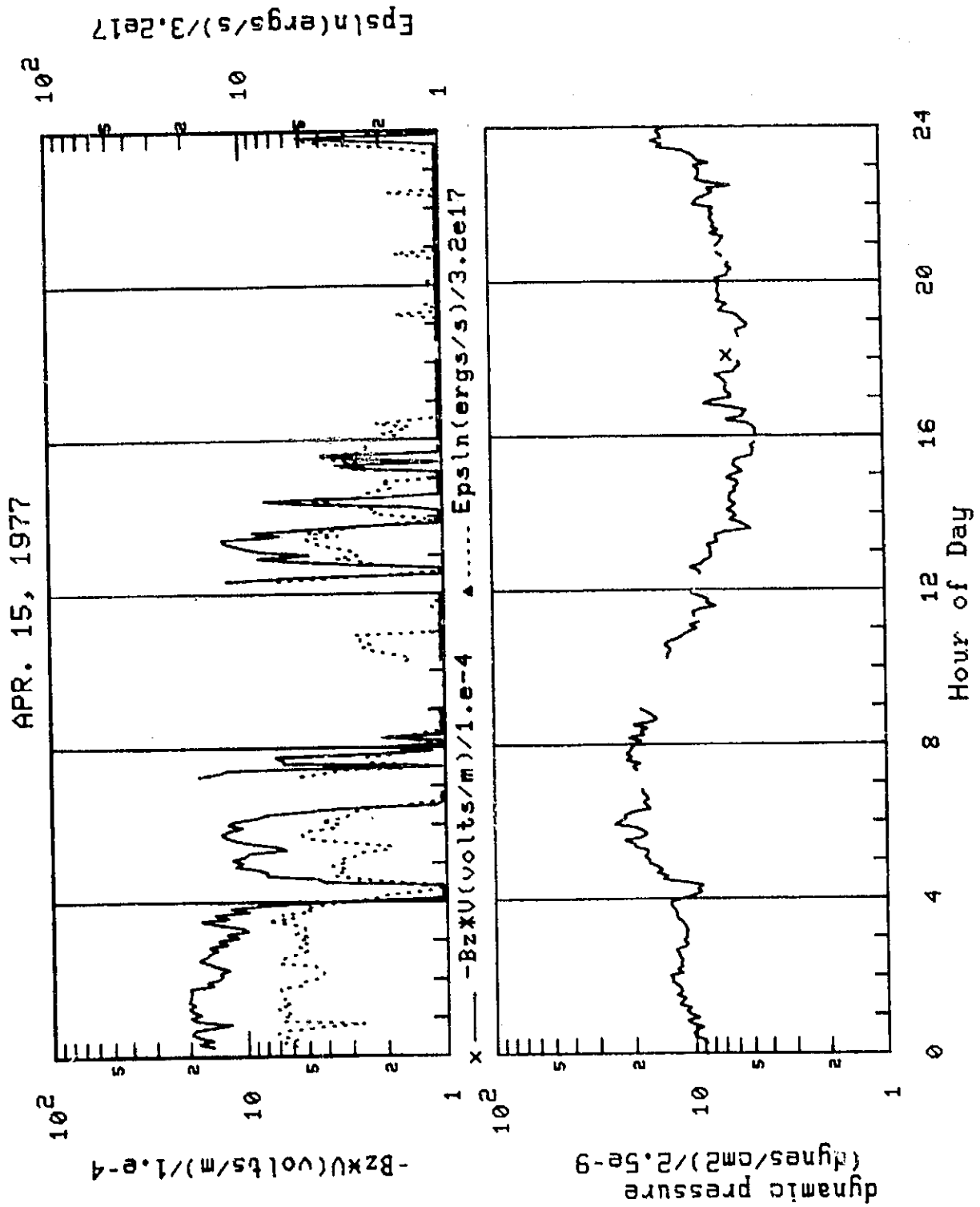
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APR. 12, 1977 IMP-J POSITION IN GSM COORDINATES: X(-11.1); Y(-32.9); Z(1.8) Page 1

HR	PH	IMAGN	Bx	MAGNETIC	FIELD	GSM	COORD.	PHI	U	N	PLASMA	PHI	THETA	PREZSI	EPSLNZ	Bx
					B _y	B _z	SIGNA				T/1000			100	100-16	
3	5	3.0	3.7	3.0	1.8	1.9	1.1	33.	416.	5.7	53.	0.3	1.6	16.6	2.1	778.7
3	10	4.2	3.3	4.2	-0.1	2.5	0.3	39.							0.0	1078.2
3	15	4.2	3.3	4.2	-0.1	2.5	0.3	39.							0.0	1000.7
3	20	4.4	3.4	4.4	-0.1	2.5	0.8	35.							0.0	1065.7
3	25	4.4	3.4	4.4	-0.1	2.5	1.5	35.							0.0	595.7
3	30	4.4	3.4	4.4	-0.1	2.5	1.5	35.							0.0	584.8
3	35	4.2	3.2	4.2	-0.1	2.5	1.8	32.							2.6	530.3
3	40	4.2	3.2	4.2	-0.1	2.5	1.6	35.							3.6	553.0
3	45	4.6	3.8	4.6	-0.1	2.5	1.5	32.							3.8	452.8
3	50	4.9	4.2	4.9	-0.1	2.5	1.3	34.							7.2	419.2
3	55	4.7	3.4	4.7	-0.1	2.5	1.4	38.							1.0	334.5
4	0	4.3	3.4	4.3	-0.1	2.5	1.2	36.							8.6	321.1
4	5	4.9	4.2	4.9	-0.1	2.5	1.3	37.							2.1	618.7
4	10	4.2	3.6	4.2	-0.1	2.5	1.5	34.							1.3	801.2
4	15	4.2	3.6	4.2	-0.1	2.5	1.5	34.							3.3	352.7
4	20	4.1	3.5	4.1	-0.1	2.5	1.6	37.							2.3	425.9
4	25	4.0	3.5	4.0	-0.1	2.5	1.6	34.							4.0	246.7
4	30	4.0	3.5	4.0	-0.1	2.5	1.6	34.	422.	5.1	122.	-2.7	-0.7	15.3	12.6	174.1
4	35	4.0	3.5	4.0	-0.1	2.5	1.6	34.							4.0	-231.7
4	40	4.0	3.5	4.0	-0.1	2.5	1.6	34.							0.2	505.4
4	45	4.0	3.5	4.0	-0.1	2.5	1.6	34.							0.0	947.0
4	50	4.6	4.1	4.6	-0.1	2.5	0.8	35.							0.2	558.8
4	55	4.3	3.7	4.3	-0.1	2.5	1.1	38.							5.7	447.0
5	0	4.5	3.5	4.5	-0.1	2.5	1.1	31.							0.5	652.1
5	5	4.5	3.5	4.5	-0.1	2.5	1.1	32.							0.5	437.5
5	10	4.5	3.5	4.5	-0.1	2.5	1.1	32.							2.3	173.1
5	15	4.5	3.5	4.5	-0.1	2.5	1.1	32.	414.	4.6	67.	-1.5	0.1	13.3	6.2	182.1
5	20	4.5	3.5	4.5	-0.1	2.5	1.1	32.	417.	5.5	68.	-1.3	-0.2	16.6	3.5	189.2
5	25	4.5	3.5	4.5	-0.1	2.5	1.1	32.	418.	8.4	170.	-0.8	0.1	24.4	0.5	526.3
5	30	4.5	3.5	4.5	-0.1	2.5	1.1	32.	422.	6.0	114.	0.4	0.1	20.5	0.2	976.1
5	35	4.5	3.5	4.5	-0.1	2.5	1.1	32.	417.	6.6	73.	0.5	0.2	10.1	0.6	1038.1
5	40	4.5	3.5	4.5	-0.1	2.5	1.1	32.	417.	6.6	78.	0.4	1.4	13.3	0.6	1015.0
5	45	4.5	3.5	4.5	-0.1	2.5	1.1	32.	425.	6.8	94.	0.4	0.1	13.2	0.1	1088.3
5	50	4.5	3.5	4.5	-0.1	2.5	1.1	32.	423.	6.0	109.	-0.1	1.5	20.5	0.8	1111.6
5	55	4.5	3.5	4.5	-0.1	2.5	1.1	32.	423.	6.3	107.	0.4	2.4	10.0	0.1	1024.1
6	0	4.5	3.5	4.5	-0.1	2.5	1.1	32.	424.	6.4	107.	0.4	2.4	13.3	0.1	1056.8
6	5	4.5	3.5	4.5	-0.1	2.5	1.1	32.	424.	6.6	105.	0.5	1.6	13.7	0.3	1003.5
6	10	4.5	3.5	4.5	-0.1	2.5	1.1	32.	424.	6.2	101.	0.5	1.6	18.7	0.3	1103.9
6	15	4.5	3.5	4.5	-0.1	2.5	1.1	32.	421.	6.4	105.	0.4	0.2	18.6	0.3	1048.1
6	20	4.5	3.5	4.5	-0.1	2.5	1.1	32.	420.	6.3	105.	0.3	0.3	18.6	0.3	1117.2
6	25	4.5	3.5	4.5	-0.1	2.5	1.1	32.	420.	6.5	113.	0.4	-0.3	10.2	0.3	866.2
6	30	4.5	3.5	4.5	-0.1	2.5	1.1	32.	420.	6.5	118.	0.4	-0.3	13.1	0.3	840.0
6	35	4.5	3.5	4.5	-0.1	2.5	1.1	32.	420.	6.1	112.	0.1	2.3	13.0	0.2	1020.8
6	40	4.5	3.5	4.5	-0.1	2.5	1.1	32.	420.	6.1	112.	0.1	2.3	13.0	0.4	952.8
6	45	4.5	3.5	4.5	-0.1	2.5	1.1	32.	417.	6.0	118.	-0.2	-0.6	17.4	0.2	1116.1
6	50	4.5	3.5	4.5	-0.1	2.5	1.1	32.	421.	6.1	95.	-0.0	-0.5	18.1	0.2	1202.8
6	55	4.5	3.5	4.5	-0.1	2.5	1.1	32.	418.	6.4	95.	0.0	-0.5	18.0	0.7	1150.3
7	0	4.5	3.5	4.5	-0.1	2.5	1.1	32.	417.	6.1	75.	0.0	1.3	17.5	0.0	1100.2
7	5	4.5	3.5	4.5	-0.1	2.5	1.1	32.	416.	5.8	73.	0.1	-0.2	16.9	1.4	1056.2
7	10	4.5	3.5	4.5	-0.1	2.5	1.1	32.	416.	5.6	64.	0.1	0.5	16.8	1.4	905.1
7	15	4.5	3.5	4.5	-0.1	2.5	1.1	32.	415.	5.1	49.	0.4	0.4	14.8	2.7	632.2
7	20	4.5	3.5	4.5	-0.1	2.5	1.1	32.	415.	5.3	48.	0.1	1.3	15.2	4.7	716.3

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7 36 4.4 3.4 2.1 1.9 0.2 32. 414. 5.4 51. 0.1 0.8 15.4 4.6 767.8
7 40 4.4 3.8 1.1 2.0 0.3 16. 414. 6.3 49. 0.6 2.9 18.0 0.6 807.5
7 45 4.2 3.8 0.1 1.6 0.4 1. 413. 5.7 51. 0.3 1.4 16.2 0.0 660.0

APR. 12, 1977 IMP-J POSITION IN GSM COORDINATES: X(-8.3); Y(-32.3); Z(7.3) Page 2

HR	MM	MAGNETIC FIELD (GSM COORD.)		PLASMA		PHI		PRESS		EPSLN2		BzZU
		Bx	By	U	M	T/1000	THETA	100	100	100-16	100-16	
7	50	3.9	3.6	413.	5.4	53.	0.4	15.4	0.0	0.0	0.0	546.9
7	55	4.0	3.8	414.	5.3	51.	0.3	15.3	0.0	0.0	0.0	322.8
8	0	4.4	3.6	413.	5.4	54.	0.6	15.5	0.5	0.5	0.5	836.4
8	5	4.6	3.5	416.	5.1	65.	-0.5	14.0	0.7	0.3	0.3	1063.5
8	10	4.6	3.5	417.	5.1	70.	-0.5	15.5	0.3	0.3	0.3	1122.3
8	15	4.6	3.5	417.	5.2	56.	-0.2	15.0	1.0	1.0	1.0	1155.7
8	20	4.5	3.5	417.	5.2	57.	0.2	15.5	0.7	0.7	0.7	1015.7
8	25	4.4	3.3	414.	5.4	45.	0.2	15.5	0.8	0.8	0.8	972.8
8	30	4.3	3.3	415.	6.0	48.	1.4	17.1	0.5	0.5	0.5	985.2
8	35	4.1	3.2	412.	6.0	51.	0.0	17.1	1.2	1.2	1.2	1152.7
8	40	4.3	3.2	410.	6.0	52.	1.1	17.5	0.8	0.8	0.8	1090.3
8	45	4.4	3.2	417.	6.0	56.	1.1	17.5	0.8	0.8	0.8	1108.9
8	50	4.4	3.2	409.	5.9	52.	1.0	16.4	0.6	0.6	0.6	1115.9
8	55	4.5	3.2	425.	6.3	54.	0.0	19.0	0.5	0.5	0.5	1254.3
9	0	4.2	3.2	410.	6.3	52.	1.4	17.8	0.5	0.5	0.5	1166.7
9	5	4.4	3.3	408.	6.0	52.	1.5	16.0	0.8	0.8	0.8	1000.3
9	10	4.5	3.3	409.	5.8	49.	1.6	17.3	0.9	0.9	0.9	1005.5
9	15	4.7	3.2	410.	5.8	53.	0.0	16.0	1.6	1.6	1.6	941.8
9	20	4.7	3.2	408.	5.6	47.	0.0	15.7	0.9	0.9	0.9	632.8
9	25	4.8	3.3	411.	5.5	45.	-0.1	15.5	0.1	0.1	0.1	702.1
9	30	4.6	3.3	408.	5.5	45.	1.2	15.3	0.3	0.3	0.3	595.3
9	35	4.5	3.6	408.	6.5	54.	1.2	18.1	0.7	0.7	0.7	977.3
9	40	4.3	3.8	407.	6.8	52.	0.8	18.7	0.1	0.1	0.1	744.2
9	45	4.4	3.8	408.	6.5	58.	0.8	18.2	0.3	0.3	0.3	788.4
9	50	4.6	4.2	408.	6.3	54.	1.4	17.5	1.8	1.8	1.8	587.0
9	55	4.5	4.4	430.	6.3	54.	1.6	18.3	1.2	1.2	1.2	230.7
10	0	4.5	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	380.3
10	5	4.5	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	19.1
10	10	4.5	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	258.2
10	15	4.5	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	242.2
10	20	4.5	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
10	25	4.5	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
10	30	4.5	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
10	35	4.5	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
10	40	4.5	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
10	45	4.5	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
10	50	4.5	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
10	55	4.5	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
11	0	4.4	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
11	5	4.4	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
11	10	4.4	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
11	15	4.4	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
11	20	4.4	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
11	25	4.4	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
11	30	4.4	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
11	35	4.4	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
11	40	4.4	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
11	45	4.4	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3
11	50	4.4	4.4	408.	6.3	54.	1.6	18.3	1.2	1.2	1.2	257.3

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11 55	5.1	4.1	1.5	2.0	0.3	18.	414.	5.2	73.	-0.1	0.2	15.0	0.0	813.8
12 10	5.5	4.4	1.0	2.0	0.3	12.	410.	5.5	71.	-0.7	1.0	16.4	0.5	839.5
12 15	5.0	4.5	0.7	2.0	0.3	8.	417.	5.5	106.	-0.0	0.5	16.1	0.1	829.2
12 20	5.0	4.1	0.4	2.0	0.6	4.	411.	6.1	72.	-0.3	1.5	17.0	0.0	1000.0
12 25	4.9	4.0	0.1	1.2	0.6	17.	405.	5.9	68.	-0.1	2.5	16.3	0.0	1132.1
12 30	4.0	3.4	2.0	-0.2	0.8	30.	409.	6.7	63.	1.3	0.3	18.8	0.5	498.2
12 35	3.9	3.4	1.0	-0.1	0.3	59.	405.	7.0	64.	0.6	-1.1	19.5	0.3	778.6
12 40										0.6				-28.2

APR. 12, 1977 IMP-J POSITION IN GSM COORDINATES X (-5.4); Y (-32.4); Z (5.1) Page 3

HR	MM	BRACH	Bx	By	PHI	U	M	T/1000	PHI	THETA	PRESS	EPSLIM	Bx
12	35	4.2	4.1	1.0	0.7	407.	7.0	75.	0.4	-0.7	19.3	125.0	67.3
12	40	4.4	4.4	-0.7	0.2	400.	6.9	75.	-0.3	-0.2	19.1	120.0	-72.1
12	45	4.3	4.3	0.0	0.4	400.	7.1	76.	-1.0	0.2	19.8	120.1	81.2
12	50	4.2	3.8	1.5	0.8	411.	7.2	68.	-2.1	1.2	20.2	12.5	276.1
12	55	4.0	3.2	2.0	1.0	429.	6.2	96.	-3.2	1.4	18.4	16.0	223.0
13	00	3.2	2.0	1.0	1.3	413.	6.2	72.	-1.3	1.2	17.7	1.2	128.5
13	05	5.0	1.3	1.7	2.1	418.	6.0	87.	-1.3	1.0	20.1	2.1	-432.8
13	10	4.0	1.0	1.7	0.6	420.	7.6	75.	-0.5	-0.3	22.3	158.0	1544.2
13	15	4.0	1.0	1.7	0.6	425.	7.5	71.	-0.7	0.0	21.0	153.7	-1441.8
13	20	4.0	1.0	1.7	0.6	424.	7.5	75.	-0.7	1.5	22.5	158.7	-1317.1
13	25	4.0	1.0	1.7	0.6	426.	6.9	69.	-0.7	1.5	21.0	147.3	-1242.6
13	30	4.0	1.0	1.7	0.6	424.	6.9	73.	-1.1	0.3	20.0	135.6	-1269.5
13	35	4.0	1.0	1.7	0.6	423.	7.5	72.	-0.4	-0.8	22.5	153.6	-1448.4
13	40	4.7	2.1	2.5	0.4	423.	7.5	66.	-0.8	-0.0	22.5	145.3	-1433.3
13	45	4.7	2.1	2.5	0.4	416.	7.6	64.	-1.1	0.7	22.1	130.8	-1377.0
13	50	4.7	2.1	2.5	0.4	416.	7.6	64.	-1.1	0.7	22.1	130.8	-1377.0
13	55	5.0	2.2	3.0	0.6	409.	7.2	58.	-1.8	1.5	19.9	133.4	-1334.8
14	00	5.0	2.2	3.0	0.6	416.	7.2	59.	-1.8	1.5	20.0	133.4	-1334.8
14	05	5.0	2.2	3.0	0.6	428.	6.5	54.	-1.2	1.2	22.0	154.0	-1378.3
14	10	5.0	2.2	3.0	0.6	413.	6.2	48.	-0.1	1.6	23.3	48.3	-1287.6
14	15	5.0	2.2	3.0	0.6	413.	6.2	47.	-0.1	1.6	23.3	0.3	-1228.2
14	20	5.0	2.2	3.0	0.6	413.	6.2	47.	-0.1	1.6	23.3	0.3	-1228.2
14	25	5.0	2.2	3.0	0.6	413.	6.2	47.	-0.1	1.6	23.3	0.3	-1228.2
14	30	5.0	2.2	3.0	0.6	414.	6.6	49.	-0.3	1.0	23.8	1.5	1023.0
14	35	5.0	2.2	3.0	0.6	415.	8.1	60.	-0.7	2.6	24.7	6.8	917.7
14	40	5.5	2.4	2.7	0.7	414.	8.3	53.	-0.2	2.3	23.0	14.6	984.7
14	45	5.5	2.4	2.7	0.7	414.	8.3	53.	-0.2	2.3	23.0	14.6	984.7
14	50	5.5	2.4	2.7	0.7	414.	8.3	53.	-0.2	2.3	23.0	14.6	984.7
14	55	6.4	2.4	2.7	0.7	414.	8.3	53.	-0.2	2.3	23.0	14.6	984.7
15	00	6.1	2.4	2.7	0.7	413.	8.4	49.	0.8	2.2	27.4	4.6	1010.0
15	05	6.1	2.4	2.7	0.7	413.	8.4	49.	0.8	2.2	27.4	4.6	1010.0
15	10	7.4	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
15	15	6.5	2.5	3.0	0.5	410.	7.5	53.	2.6	0.8	26.6	3.5	889.6
15	20	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
15	25	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
15	30	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
15	35	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
15	40	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
15	45	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
15	50	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
15	55	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
16	00	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
16	05	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
16	10	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
16	15	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
16	20	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
16	25	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
16	30	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
16	35	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
16	40	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
16	45	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
16	50	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6
16	55	6.5	2.5	3.0	0.5	411.	7.5	53.	2.6	0.8	26.6	3.5	889.6

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16	30	7.0	4.8	-4.3	-1.0	1.5	318.	495.	7.4	61.	-1.3	3.7	4	181.3	-779.3
16	35	6.5	5.0	-3.6	-0.6	1.5	321.	496.	8.2	62.	-1.2	3.7	28	112.7	-503.8
16	40	6.5	4.3	-3.6	-0.6	1.5	324.	499.	9.0	64.	-1.2	3.5	24	146.3	-247.6
16	45	6.5	4.0	-3.6	-1.4	1.6	327.	495.	8.6	64.	-1.3	3.0	23	146.3	-255.6
16	50	6.5	4.3	-4.2	-1.1	1.3	336.	497.	8.3	78.	-1.3	3.4	23	141.5	-163.7
16	55	6.5	4.3	-4.2	-0.9	1.3	326.	497.	9.7	59.	-1.3	2.4	23	119.5	-146.7
17	5	6.1	4.8	-2.3	-1.1	1.1	331.	497.	8.8	78.	-1.6	2.1	25	109.0	-746.3
17	10	6.5	4.0	-2.3	-1.6	1.1	327.	494.	8.0	81.	-1.6	2.8	23	152.0	-114.0
17	15	6.5	4.0	-3.4	-1.1	1.0	326.	493.	7.8	56.	-1.6	2.8	22	144.2	-631.0
17	20	6.5	4.7	-3.3	-1.5	1.0	326.	493.	7.8	58.	-1.6	3.1	21	162.0	-988.7
17	25	6.5	4.4	-3.3	-2.1	1.0	323.	491.	7.8	56.	-1.6	2.1	21	141.5	-882.8
17	30	6.5	4.4	-3.6	-2.4	1.2	319.	496.	8.3	59.	-1.6	2.3	21	172.6	-563.6

APR. 12, 1977 IMP-J POSITION IN GSM COORDINATES: X (-2.3); Y (-32.4); Z (-4.0) Page 4

HR	PH	BMAGN	Bx	BY	Bz	COORD. (GSM)	PHI	U	N	T/1000	PLASMA	PHI	THETA	PRESS 1000	EPSLN2 100-16	BRAU
17	35	5.1	4.1	-3.8	-1.7	1.3	317.	399.	7.8	75.	-0.5	-0.5	2.0	20.7	135.4	-881.5
17	40	6.5	3.6	-4.7	-1.8	1.8	307.	398.	8.7	54.	-0.5	2.5	2.8	22.9	139.9	-719.7
17	45	6.7	4.0	-4.4	-2.3	1.7	312.	403.	9.1	63.	-1.1	2.5	2.4	24.7	171.3	-310.1
17	50	6.0	3.1	-4.3	-2.1	1.7	306.	406.	10.5	72.	-1.6	2.5	2.8	28.0	137.8	-523.5
17	55	6.1	3.5	-4.0	-1.9	1.6	311.	406.	10.8	53.	-2.6	2.5	2.5	26.0	133.2	-774.1
18	0	5.7	2.5	-4.3	-1.9	2.0	300.	406.	10.9	62.	-1.0	2.0	2.8	29.6	120.6	-770.6
18	5	5.1	3.1	-2.9	-1.7	1.2	269.	410.	11.0	72.	-1.8	2.2	2.2	29.2	132.0	-140.5
18	10	5.8	4.2	-3.0	-0.6	1.0	316.	419.	10.4	71.	-2.6	2.2	2.0	29.0	98.4	-258.2
18	15	5.8	4.7	-3.4	-0.4	1.0	327.	403.	9.7	80.	-2.1	2.0	2.3	26.3	73.5	-199.3
18	20	5.9	4.5	-3.3	-0.5	1.1	324.	396.	8.9	64.	-0.9	1.9	2.4	23.4	83.0	-199.3
18	25	6.3	5.2	-3.1	-0.7	1.0	329.	397.	8.9	64.	-2.3	1.5	2.5	23.5	72.7	-32.2
18	30	6.3	5.4	-2.8	-0.6	0.8	333.	395.	9.6	66.	-2.5	2.2	2.8	25.1	42.8	272.2
18	35	6.2	5.7	-2.9	-0.6	0.8	333.	400.	8.7	55.	-1.2	2.8	2.8	23.2	53.0	230.5
18	40	6.2	5.2	-2.7	-0.3	1.2	333.	400.	10.4	53.	-1.7	2.8	2.8	23.8	54.6	126.0
18	45	5.7	4.8	-2.7	-0.3	0.9	330.	396.	10.3	64.	-2.1	2.8	2.4	24.5	47.2	120.8
18	50	5.7	4.9	-3.0	-0.5	1.0	328.	397.	10.1	73.	-2.4	2.2	2.2	26.6	49.1	213.1
18	55	5.6	4.8	-3.2	-0.5	0.7	330.	397.	9.4	66.	-2.0	2.2	2.0	24.6	47.2	123.0
19	5	5.8	5.1	-2.4	-0.9	0.5	333.	396.	10.4	69.	-2.4	2.2	2.2	24.6	40.5	193.8
19	10	5.8	5.7	-2.9	-0.9	0.5	333.	396.	10.4	67.	-1.9	2.0	2.1	27.1	41.0	236.7
19	15	7.3	6.5	-2.3	-1.4	0.3	336.	389.	13.3	77.	-1.4	1.7	1.7	33.6	32.0	552.6
19	20	5.4	5.2	-2.3	-2.2	1.6	336.	394.	10.2	70.	-1.0	2.2	2.6	36.4	27.1	572.2
19	25	5.4	4.0	-0.0	-2.2	3.0	306.	403.	11.2	71.	-1.1	2.6	2.6	36.4	165.4	-82.5
19	30	6.2	5.8	1.1	-1.4	0.2	163.	420.	12.5	54.	-0.3	1.4	1.4	20.8	214.2	-583.5
19	35	6.2	5.7	1.5	-1.4	0.3	163.	425.	12.5	107.	-0.3	1.4	1.4	20.8	260.1	-802.4
19	40	6.5	5.4	1.5	-2.0	0.3	165.	418.	10.7	48.	-0.7	2.4	1.8	30.3	248.5	840.2
19	45	6.5	5.4	1.1	-2.1	0.4	167.	417.	10.7	52.	-0.7	1.8	1.7	31.1	255.0	881.1
19	50	6.5	5.6	1.2	-2.7	0.4	168.	418.	10.5	52.	-1.1	1.9	1.9	26.0	246.1	-716.1
19	55	6.5	5.7	1.0	-2.6	0.3	167.	417.	10.3	52.	-1.1	1.9	1.9	26.0	251.2	-846.3
20	0	6.5	5.6	0.5	-2.1	0.3	174.	419.	10.8	49.	-1.4	1.4	1.4	28.7	321.2	-104.3
20	5	6.5	5.6	0.5	-2.1	0.3	175.	418.	10.1	55.	-1.5	1.8	1.8	29.5	321.2	804.5
20	10	6.5	5.1	0.6	-1.9	0.3	173.	421.	11.2	77.	-1.5	1.8	1.8	29.5	243.8	815.4
20	15	6.5	5.2	0.6	-2.1	0.2	182.	423.	11.6	77.	-1.9	1.2	1.2	34.4	245.8	-802.8
20	20	6.5	5.3	0.7	-2.0	0.2	185.	418.	10.8	58.	-2.0	1.2	1.2	30.0	250.1	-843.6
20	25	6.5	5.7	0.6	-1.7	0.2	187.	422.	10.8	65.	-1.8	1.2	1.2	31.7	245.0	-706.5
20	30	6.5	5.7	0.4	-1.2	0.3	186.	422.	11.1	67.	-1.2	1.2	1.2	32.3	237.0	-503.4
20	35	6.5	5.7	0.4	-1.2	0.3	186.	422.	11.1	67.	-1.2	1.2	1.2	32.3	237.0	-503.4

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APR. 13, 1977 IMP-J POSITION IN GSM COORDINATES: X(2.4); Y(-29.7); Z(-10.6) Page 5

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HR	PH	BRAGN	Bx	By	FIELD (GSM COORD.)	Bz	PHI	U	M	T/1000	PLASMA	PHI	THETA	PRESS	EPSLN	PRU
11	5	4.5	3.7	0.2	2.5	0.2	3.	387.	8.6	69.	1.0	2.0	21.6	0.0	984.9	
9	30	3.2	3.7	0.4	2.5	0.0	6.	385.	8.7	70.	0.7	1.4	21.6	0.0	977.8	
9	35	3.4	3.5	0.3	2.6	0.1	4.	384.	8.7	75.	0.8	1.4	21.4	0.0	980.0	
9	40	3.6	3.4	0.5	2.7	0.2	38.	386.	9.2	70.	1.0	2.2	22.0	0.0	1040.1	
9	45	3.8	3.2	0.5	2.6	0.3	8.	388.	8.2	94.	0.8	1.7	20.7	0.0	1002.3	
9	50	4.0	3.0	0.8	2.0	0.8	39.	378.	8.1	64.	0.2	2.0	20.0	0.0	737.4	
10	5	4.2	3.6	1.7	1.9	0.7	349.	376.	7.5	57.	1.5	2.1	19.1	1.8	621.9	
10	10	4.3	3.5	1.5	2.0	0.4	340.	388.	6.8	82.	1.8	2.1	18.9	1.8	747.6	
10	15	4.4	3.4	1.2	1.8	0.7	344.	389.	6.8	86.	2.8	0.8	17.3	1.1	781.7	
10	20	4.5	3.3	1.2	1.7	1.2	327.	388.	5.0	65.	2.8	0.5	17.1	1.5	690.0	
10	25	4.6	3.2	1.0	1.8	1.0	325.	397.	5.0	58.	2.2	0.7	13.2	1.3	674.5	
10	30	4.7	3.1	1.0	1.8	1.0	319.	404.	5.1	56.	1.9	1.0	14.0	1.3	732.7	
10	35	4.8	3.0	1.4	1.4	1.0	310.	416.	5.6	56.	1.3	1.0	16.1	24.0	562.8	
10	40	4.9	2.9	1.2	1.2	1.5	310.	410.	4.6	54.	1.0	1.0	12.9	29.0	491.0	
10	45	5.0	2.8	0.4	0.4	1.0	298.	408.	5.7	51.	2.3	2.4	15.8	46.4	179.3	
10	50	5.1	2.7	0.1	0.1	1.0	297.	415.	5.7	57.	2.3	4.0	16.6	50.5	37.5	
11	5	5.2	2.6	0.6	0.1	1.0	290.	426.	5.6	67.	0.5	1.0	17.0	48.0	196.3	
11	10	5.3	2.5	0.4	0.6	1.0	288.	416.	5.6	65.	2.0	1.6	16.0	66.3	353.0	
11	15	5.4	2.4	0.3	0.4	2.0	283.	423.	5.8	70.	2.0	1.4	17.4	54.3	174.4	
11	20	5.5	2.3	0.3	0.3	1.6	282.	417.	6.8	68.	2.0	1.7	19.7	55.5	170.6	
11	25	5.6	2.2	0.4	0.4	1.4	280.	423.	5.9	68.	2.0	1.7	19.7	55.5	170.6	
11	30	5.7	2.1	0.8	0.8	1.1	316.	423.	5.3	65.	2.0	1.5	15.0	37.7	309.1	
11	35	5.8	2.0	1.0	0.6	1.1	321.	412.	5.1	46.	4.2	0.9	15.0	28.2	309.1	
11	40	5.9	1.9	1.0	0.6	1.1	321.	409.	5.1	121.	5.0	0.8	14.2	29.3	153.8	
11	45	6.0	1.8	0.8	0.6	0.8	320.	411.	6.5	70.	2.3	1.5	18.4	20.3	262.5	
11	50	6.1	1.7	1.0	1.7	1.0	326.	412.	6.0	76.	2.3	1.5	18.4	10.4	817.0	
12	5	6.2	1.6	1.2	1.7	1.0	332.	420.	5.0	104.	0.6	1.0	20.7	5.1	699.0	
12	10	6.3	1.5	1.2	1.6	1.2	332.	418.	5.0	78.	3.1	1.3	17.1	33.7	51.0	
12	15	6.4	1.4	1.1	1.4	1.4	331.	419.	5.8	74.	1.7	1.4	17.6	43.0	121.6	
12	20	6.5	1.3	1.1	1.3	1.4	318.	415.	6.2	88.	1.7	2.0	16.0	55.0	231.0	
12	25	6.6	1.2	1.1	1.1	1.3	315.	422.	6.2		1.0	2.1	18.5	88.0	606.0	

APR. 13, 1977 IMP-J POSITION IN GSM COORDINATES: X(8.4); Y(-28.9); Z(-4.0) Page 7

APP. 13. 1977 IMP-J POSITION IN GSM COORDINATES: X(11.3); Y(-25.3); Z(-11.0) Page 8

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IMP-J POSITION IN GSM COORDINATES: X(11.3); Y(-25.3); Z(-11.0)																Page
APR. 13, 1977																
MAGNETIC FIELD (GSM COORD.)																
HR	MIN	BRAGH	Bx	By	Bz	PHI	U	N	T/1000	PLASMA	PHI	THETA	PRESS#	EPSLHX	BzU	
																100-16
15	5	4	0	17	1.0	333	414	62	63	0.7	-1.4	17.6	5	8	588	2
16	10	4	0	-0	0.5	347	412	60	48	0.8	-0.2	17.1	2	5	568	1
16	15	4	1	-15	0.5	338	413	59	54	0.8	-0.8	17.4	3	5	568	4
16	20	4	3	-1	0.1	339	413	59	52	0.8	-0.5	16.9	5	5	568	1
16	25	4	2	-16	0.3	337	413	59	51	1.3	1.5	16.7	7	2	510	3
16	30	3	7	-10	0.6	332	415	65	55	1.1	1.5	18.9	5	5	551	9
16	35	3	1	-16	0.3	333	412	67	55	1.2	0.7	16.9	3	6	547	1
16	40	4	2	-14	0.3	338	413	59	54	1.0	0.2	16.9	5	5	547	7
16	45	4	2	-11	0.3	340	413	59	51	0.7	-0.4	18.5	3	5	559	3
16	50	3	0	-13	0.3	339	411	61	53	1.2	-0.4	17.4	5	5	559	6
16	55	3	4	-16	0.5	335	412	61	52	0.5	-0.9	18.0	7	7	531	7
17	0	3	5	-17	0.5	336	413	65	50	0.5	-0.9	18.0	7	7	531	7
17	5	3	5	-14	0.5	336	408	65	64	1.3	-2.4	19.8	0	1	611	0
17	10	3	3	-10	2.3	336	407	64	64	1.3	-2.4	19.8	0	1	611	0
17	15	3	2	-12	0.3	337	410	86	76	0.4	2.1	15.8	3	5	573	5
17	20	3	2	-11	1.0	334	416	54	60	0.4	2.1	15.8	3	5	573	5
17	25	4	1	-16	0.3	336	408	62	71	0.8	1.7	17.4	4	8	31	883
17	30	3	3	-15	1.0	335	408	57	70	0.6	1.7	15.8	3	5	65	3
17	35	3	3	-15	0.2	334	408	65	82	2.1	0.7	13.3	3	5	104	8
17	40	4	6	-13	0.7	338	410	87	58	2.1	0.7	18.4	3	5	142	8
17	45	4	4	-20	0.7	336	407	87	67	2.1	0.7	19.4	3	5	123	9
17	50	5	4	-18	0.6	337	406	87	70	1.1	-1.7	23.4	2	5	239	3
17	55	4	2	-14	0.7	339	409	72	70	1.1	-1.7	23.4	2	5	239	3
18	0	5	4	-11	0.7	338	415	68	67	0.4	-0.5	18.0	4	7	152	7
18	5	3	3	-11	0.7	332	409	68	67	0.4	-0.5	18.0	4	7	152	7
18	10	3	3	-15	0.7	336	415	68	75	0.3	-0.5	17.7	5	7	152	7
18	15	3	3	-15	1.0	336	407	68	75	0.4	-0.9	17.7	5	7	152	7

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18 20	4.0	347.	485.	7.4	79.	0.2	0.7	29.4	4.0	345.7
18 25	4.1	346.	484.	7.2	78.	0.1	-2.1	19.7	16.4	265.1
18 30	4.0	346.	483.	6.6	58.	-0.1	-0.8	16.7	12.6	147.7
18 35	3.8	350.	487.	6.5	61.	-0.3	0.0	18.0	31.4	-2.0
18 40	3.7	351.	488.	6.7	65.	-0.3	0.0	15.0	44.8	-58.1
18 45	3.6	355.	485.	6.1	63.	-0.3	-0.1	16.7	55.9	-88.8
18 50	3.3	352.	484.	6.0	62.	-0.3	1.0	16.4	44.7	-77.1
18 55	3.6	353.	486.	6.2	65.	-0.7	1.1	16.8	53.2	-41.8
19 0	3.7	353.	485.	6.2	65.	-0.7	1.3	16.0	41.0	56.1
19 5	3.2	350.	487.	7.6	65.	-0.6	1.4	20.1	14.0	-11.0
19 10	4.2	359.	486.	7.3	58.	0.6	1.5	20.8	3.7	8.1
19 15	4.5	359.	485.	7.6	58.	0.6	1.6	20.2	10.4	-6.0
19 20	4.3	359.	485.	7.4	63.	1.7	1.0	20.8	10.4	-14.5
19 25	4.3	359.	485.	7.6	63.	1.7	1.0	20.2	10.4	-14.5
19 30	4.4	359.	485.	7.4	63.	1.7	1.0	20.2	10.4	-14.5
19 35	4.0	359.	485.	8.4	78.	0.0	1.0	22.6	10.4	11.3
19 40	3.7	355.	484.	8.6	82.	0.0	1.0	22.3	13.6	11.3
19 45	3.8	355.	484.	8.4	82.	0.0	1.2	22.3	27.0	-23.0
19 50	3.5	338.	398.	9.2	84.	0.7	1.2	24.4	29.1	-13.2
19 55	3.2	338.	398.	8.3	75.	0.3	1.2	22.0	20.0	-35.4
20 0	3.7	327.	398.	9.5	75.	2.0	1.5	18.4	5.0	55.1
20 5	3.7	322.	398.	9.5	8.	2.0	2.3	25.2	47.6	31.7
20 10	3.7	322.	398.	7.4	68.	3.0	2.3	29.1	57.2	-22.5
20 15	3.7	322.	398.	7.3	84.	3.7	1.4	19.6	50.3	-40.0
20 20	3.3	325.	395.	9.6	81.	2.2	0.8	25.6	28.6	194.5
20 25	3.4	334.	387.	11.2	95.	2.6	1.8	28.0	17.2	304.2
20 30	3.4	338.	394.	10.1	95.	1.5	1.5	25.7	34.6	100.7
20 35	3.3	333.	388.	9.4	80.	2.0	1.5	23.7	40.1	-160.7
20 40	3.3	321.	384.	10.5	80.	2.0	2.0	25.0	20.1	-11.2
20 45	3.3	325.	385.	11.7	103.	1.1	1.4	29.0	12.0	162.3
20 50	3.4	334.	380.	10.5	92.	0.3	0.5	26.1	12.0	

APR. 13, 1977 IMP-J POSITION IN GSM COORDINATES: X(13.0); Y(-19.3); Z(-17.3) Page 9													
--- MAGNETIC FIELD (GSM COORD.) ---			PLASMA			PRESS		EPCLN2					
HR	MM	BRAGN	Bx	By	Bz	PHI	U	N	T1000	PHI	THETA	10m9	10-15
20	50	4.2	3.5	-1.0	0.8	0.0	332.	10.3	94.	0.4	1.3	26.2	11.5
20	55	4.3	3.6	-1.7	0.6	0.3	330.	10.6	96.	0.8	1.7	25.6	17.7
21	0	4.2	3.7	-1.2	0.7	0.3	335.	10.1	98.	-0.7	1.9	25.5	11.1
21	5	3.5	3.1	-1.5	0.2	0.8	334.	10.5	86.	1.4	2.0	26.1	18.6
21	10	4.2	3.6	-1.0	0.8	0.8	335.	10.4	88.	1.2	2.5	25.7	28.6
21	15	3.2	2.6	-1.4	-0.2	1.0	332.	10.9	93.	1.6	2.0	27.3	21.6
21	20	3.1	2.3	-1.4	-0.7	1.2	327.	9.6	92.	1.6	1.0	23.6	29.7
21	25	2.9	1.3	-1.6	-1.7	1.2	309.	10.5	73.	1.5	2.5	26.3	40.0
21	30	3.4	3.5	-2.1	-1.5	1.7	306.	12.7	92.	1.8	1.4	30.6	41.5
21	35	4.3	3.5	-2.3	0.0	0.6	327.	12.7	92.	1.8	1.4	30.6	15.4
21	40	4.4	3.5	-2.5	0.8	0.5	325.	12.7	92.	1.8	1.4	30.6	17.7
22	15	1.0	-0.0	-0.8	0.2	0.6	268.	13.3	68.	-0.2	-2.7	34.0	0.7
22	20	1.0	-0.4	-0.9	-0.3	1.5	293.	14.7	84.	0.0	0.7	39.3	3.7
22	25	1.0	-0.6	-1.1	0.2	1.5	244.	13.1	72.	0.0	1.6	34.8	2.3
22	30	2.3	-0.3	-1.0	0.5	1.0	253.	13.4	71.	0.6	2.2	36.2	5.2
22	35	1.8	-0.3	-1.6	0.4	0.7	261.	15.2	62.	1.2	1.6	40.6	3.1
22	40	2.1	-0.1	-1.0	0.7	0.9	257.	15.5	64.	0.4	0.5	41.2	3.6
22	45	2.4	-0.4	-1.0	1.2	0.9	258.	15.8	63.	1.1	0.5	41.8	2.1
22	50	2.3	-0.7	-2.7	0.6	0.7	256.	14.8	62.	0.6	-0.7	39.2	0.8
22	55	3.7	-0.6	-3.2	1.3	1.3	280.	13.8	65.	0.0	1.1	37.2	1.0
23	0	3.7	-0.6	-3.2	1.3	1.3	280.	13.8	65.	0.0	1.1	37.2	0.9

5	10	15	20	25	30	35	40	45	50	55
23	23	23	23	23	23	23	23	23	23	23
5	10	15	20	25	30	35	40	45	50	55
5	10	15	20	25	30	35	40	45	50	55

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INP-J POSITION IN GSM COORDINATES: X(17.7); Y(-16.9); Z(-15.2)

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APR. 14, 1977 IMP-J POSITION IN GSM COORDINATES: X(19.6); Y(-15.7); Z(-13.6) Page 12

--- MAGNETIC FIELD (GSM)		COORD.)		PHI		---		U		N		PLASMA T/1000		PHI		THETA		PRESS 1000		EPSLX 100-16		BZU	
HR	PM	BPM	Bx	Bz	SIGMA	PHI	---	U	N	PLASMA T/1000	PHI	THETA	PRESS 1000	EPSLX 100-16	BZU								
0	10	15	2.7	0.2	0.2	280	370	15.2	31	22	3.5	35.1	12.6	-416.8									
0	15	20	2.7	0.1	0.2	280	370	15.4	31	22	3.5	35.1	12.6	-19.3									
0	20	25	2.7	0.1	0.2	280	370	15.4	31	22	3.5	35.1	12.6	-19.3									
0	25	30	2.7	0.6	0.5	286	369	13.0	31	4.5	3.6	32.5	31.9	-634.6									
0	30	35	2.7	0.7	0.8	282	372	14.2	28	5.0	3.6	33.7	34.1	-236.6									
0	35	40	2.7	0.4	0.6	275	371	14.6	31	6.0	3.6	33.6	34.1	-277.9									
0	40	45	2.7	0.9	0.6	275	370	13.6	33	6.0	3.1	31.5	15.0	-157.3									
0	45	50	2.7	1.1	0.2	271	373	14.0	30	8.6	3.1	31.5	10.9	-329.2									
0	50	55	2.7	0.6	0.2	248	375	14.0	30	8.6	3.2	32.9	19.5	-16.9									
0	55	60	2.7	0.2	0.2	245	376	13.7	32	6.5	3.2	32.3	19.5	-231.3									
0	60	65	2.7	0.3	0.0	260	374	13.1	31	4.5	2.7	30.6	22.2	-200.3									
0	65	70	2.7	0.4	0.4	262	372	13.1	35	6.8	4.3	26.7	35.0	-109.3									
0	70	75	2.7	0.4	0.5	289	377	12.0	36	6.8	4.3	26.7	35.0	-165.9									
0	75	80	2.7	0.7	0.6	277	380	12.9	31	4.4	2.7	31.5	33.8	-211.1									
0	80	85	2.7	0.6	0.6	286	370	14.5	30	4.4	2.7	31.4	35.9	-269.4									
0	85	90	2.7	1.0	0.4	286	370	14.1	30	4.2	1.8	32.8	33.8	-282.4									
0	90	95	2.7	0.8	1.7	31	370	14.5	39	2.8	3.2	33.5	19.3	-213.2									
0	95	100	2.7	0.7	0.6	53	368	14.0	30	2.8	2.5	31.8	27.7	-249.9									
0	100	105	2.7	0.4	0.6	53	370	14.0	39	3.2	3.4	32.6	20.1	-137.4									
0	105	110	2.7	0.7	0.7	64	368	12.6	35	5.6	1.3	31.1	37.5	-235.1									
0	110	115	2.7	0.9	0.3	57	368	12.7	38	6.6	2.2	31.1	37.5	-254.8									
0	115	120	2.7	0.7	0.8	51	368	12.7	35	6.6	3.2	32.8	37.8	-284.5									
0	120	125	2.7	0.8	0.2	51	368	12.9	36	8.8	3.1	31.6	34.5	-365.4									
0	125	130	2.7	1.0	0.5	42	367	13.0	38	3.0	2.9	33.3	36.1	-346.4									
0	130	135	2.7	0.4	2.3	30	367	14.8	37	5.6	2.9	33.3	36.1	-155.1									
0	135	140	2.7	0.2	1.0	349	363	11.6	33	5.8	4.8	27.1	40.6	-171.4									
0	140	145	2.7	0.4	1.2	349	363	12.3	33	5.5	4.8	27.1	40.6	-149.8									
0	145	150	2.7	0.6	1.0	349	363	11.6	44	3.9	3.1	35.2	65.7	-123.1									
0	150	155	2.7	0.6	1.2	349	359	15.0	38	3.9	3.1	35.2	65.7	-201.3									
0	155	160	2.7	0.9	0.3	357	359	13.4	42	1.1	1.4	32.9	77.7	-145.8									
0	160	165	2.7	1.0	1.0	357	357	13.4	42	1.1	1.4	32.9	77.7	-237.3									
0	165	170	2.7	0.9	1.0	357	357	13.4	42	1.1	1.4	32.9	77.7	-364.3									
0	170	175	2.7	1.0	1.0	338	362	15.1	41	1.3	3.2	34.4	55.1	-342.8									
0	175	180	2.7	1.5	1.5	338	362	16.0	34	1.3	3.2	34.4	55.1	-442.4									

APR. 14, 1977 IMP-J POSITION IN GSM COORDINATES: X(21.1); Y(-10.2); Z(-16.3) Page 13

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ORIGINAL PAGE IS
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17 39	1.8	-0.9	-0.7	-1.3	0.6	216.	374.	18.7	44.	-2.6	-5.7	43.7	29.4	-194.7
17 55	4.1	-1.9	-0.6	-2.5	0.6	234.	373.	16.7	38.	-1.6	-4.2	38.8	89.6	-332.9
18 05	4.1	-1.9	-0.6	-2.5	0.6	234.	376.	16.3	40.	-1.7	-3.9	38.2	84.4	-379.6
18 15	4.1	-1.9	-0.6	-2.5	0.6	234.	375.	16.3	45.	-1.8	-3.9	38.2	81.7	-381.2
18 25	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	87.3	-366.8
18 35	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
18 45	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
18 55	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
19 05	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
19 15	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
19 25	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
19 35	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
19 45	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
19 55	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
20 05	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
20 15	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
20 25	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
20 35	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
20 45	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
20 55	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
21 05	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
21 15	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
21 25	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
21 35	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
21 45	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
21 55	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
22 05	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
22 15	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
22 25	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
22 35	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
22 45	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
22 55	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
23 05	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
23 15	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
23 25	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
23 35	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
23 45	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9
23 55	4.1	-1.9	-0.6	-2.5	0.6	234.	374.	17.6	43.	-2.0	-3.4	41.1	113.9	-356.9

APR. 14, 1977 INP-J POSITION IN GSM COORDINATES: X (22.4); Y (0.5); Z (-17.6) Page 14

HR	MM	MAGN	Bx	BY	FIELD	PHI	U	N	T/1000	PHI	THETA	PRESS	EPSLN	BxU
21	20	6.2	3.5	-2.8	0.3	324.	385.	0.7	100.	5.0	-2.7	24.1	239.9	-171.3
21	25	6.3	3.5	-4.5	0.5	322.	387.	0.5	92.	4.3	-4.1	23.7	269.5	-149.6
21	30	6.3	3.5	-4.5	0.5	322.	388.	0.4	94.	3.8	-5.2	23.7	270.1	-172.9
21	35	6.5	3.4	-5.5	0.5	317.	400.	0.4	95.	-1.5	-4.4	25.7	278.8	-196.1
21	40	6.5	3.4	-4.5	0.5	322.	388.	0.4	85.	4.3	-4.6	23.6	302.8	-246.7
21	45	5.4	1.8	-4.5	0.0	332.	388.	0.4	85.	4.3	-4.6	23.6	257.6	-178.4
21	50	5.4	2.6	-4.5	0.0	337.	388.	0.4	85.	3.7	-4.5	23.6	216.3	-155.5
21	55	5.8	2.6	-4.5	0.0	331.	387.	0.4	88.	3.7	-3.3	23.6	237.0	-185.5
22	05	6.1	2.6	-4.5	0.2	333.	419.	0.6	88.	3.7	-3.3	23.6	301.0	-248.9
22	10	6.1	2.6	-4.5	0.6	323.	419.	0.6	79.	3.6	-3.0	23.7	259.8	-191.0
22	15	5.0	0.0	-5.1	1.0	335.	390.	0.3	83.	3.3	-3.5	24.0	248.1	-198.6
22	20	5.5	2.6	-4.4	1.5	335.	391.	0.3	75.	3.3	-4.1	23.8	262.6	-232.4
22	25	5.8	2.6	-4.4	1.7	339.	390.	0.0	91.	3.3	-3.3	23.8	205.8	-170.4
22	30	6.3	5.3	-4.4	0.0	331.	387.	0.8	106.	3.3	-5.5	23.5	132.2	-503.2
22	35	6.3	5.3	-4.4	0.0	330.	370.	0.8	110.	3.3	-4.6	23.5	24.5	-403.2
22	40	6.3	5.3	-4.4	0.0	336.	371.	0.8	73.	3.3	-4.4	23.5	355.1	-539.8
22	45	6.3	5.3	-4.4	0.0	327.	371.	0.8	57.	3.3	-3.0	23.5	339.3	-398.6
22	50	6.3	5.3	-4.4	0.6	326.	372.	0.7	78.	3.3	-3.5	23.5	171.1	-171.4
22	55	6.4	5.3	-4.4	0.6	325.	379.	0.3	119.	3.3	-3.0	23.5	72.1	-84.8
23	05	6.4	5.3	-4.4	0.3	325.	373.	0.8	76.	3.3	-3.0	23.5	68.5	-71.8
23	10	6.4	5.3	-4.4	0.3	324.	371.	0.8	62.	3.3	-3.0	23.5	82.3	-82.3
23	15	6.4	5.3	-4.4	0.7	324.	371.	0.8	84.	3.3	-2.2	23.5	17.4	-105.5
23	20	4.6	2.3	-4.4	1.6	318.	372.	0.3	86.	3.3	-2.2	23.5	117.1	-86.6
23	25	4.6	2.3	-4.4	0.6	308.	374.	0.3	86.	3.3	-2.2	23.5	134.1	-145.5
23	30	4.6	2.3	-4.4	0.6	255.	372.	0.3	77.	3.3	-2.2	23.5	128.9	-1535.0
23	35	4.6	2.3	-4.4	0.6	166.	372.	0.3	70.	3.3	-2.2	23.5	164.0	-1643.4
23	40	4.6	2.3	-4.4	0.6	166.	372.	0.3	70.	3.3	-2.2	23.5	164.0	-1776.2

ORIGINAL PAGE IS
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APR. 15, 1977										IMP-J POSITION IN GSM COORDINATES: X(22.8); Y(2.7); Z(-17.1) Page 15									
HR	MM	SS	MAAG	Bx	BY	FIELD	(GSM)	COORD.	---	U	N	T/1000	PLASMA	PHI	THETA	PRESS	EPSLN	Bx	BY
23	35		4.1	-0.6	0.7	-4.0	0.8	132.	---	385.	1.9	60.	60.	2.8	-3.1	22.0	184.0	1503.5	1503.5
23	40		3.6	-1.4	1.3	-2.9	0.8	135.	---	386.	2.4	64.	64.	2.0	-4.2	22.6	211.0	1782.9	1782.9
23	45		3.6	-1.5	2.7	-2.7	0.5	135.	---	386.	19.4	65.	65.	2.0	-4.2	22.6	211.0	1782.9	1782.9
23	50		3.6	-1.3	3.0	-1.4	0.8	119.	---	372.	10.8	64.	64.	1.8	-2.1	25.1	210.8	1787.5	1787.5
23	55		3.3	-1.2	2.8	-1.0	0.4	112.	---	372.	10.3	62.	62.	1.1	-1.7	24.7	227.7	1787.5	1787.5
										366.	10.3	50.	50.	0.8	-0.7	27.0	188.2	1882.2	1882.2
										371.	11.3	74.	74.	0.6	-1.2	27.5	137.2	1258.1	1258.1
										375.	11.7	61.	61.	1.5	-2.9	24.1	215.4	1814.9	1814.9
										376.	10.2	59.	59.	0.7	-0.2	26.6	214.7	1737.7	1737.7
										372.	11.5	62.	62.	0.6	-1.1	26.4	188.2	1882.2	1882.2
										371.	12.0	59.	59.	1.1	-1.1	26.4	215.4	1814.9	1814.9
										371.	11.5	57.	57.	0.6	-1.1	26.4	188.2	1882.2	1882.2
										376.	15.3	74.	74.	1.8	-2.7	29.2	191.4	1862.7	1862.7
										377.	15.3	71.	71.	0.8	-2.2	28.1	211.4	1862.7	1862.7
										381.	11.6	80.	80.	1.3	-2.2	28.1	211.4	1862.7	1862.7
										381.	15.8	72.	72.	1.1	-1.5	29.3	211.4	1862.7	1862.7
										376.	12.4	77.	77.	1.8	-2.4	30.5	221.0	1980.0	1980.0
										378.	12.4	81.	81.	1.0	-2.4	30.5	221.0	1980.0	1980.0
										381.	13.4	101.	101.	3.4	-3.7	32.6	164.3	1400.1	1400.1
										382.	13.4	85.	85.	3.6	-3.7	32.6	164.3	1400.1	1400.1
										386.	15.5	85.	85.	2.6	-3.2	33.4	141.8	1404.0	1404.0
										378.	15.0	100.	100.	2.6	-3.2	33.4	141.8	1404.0	1404.0
										379.	13.1	86.	86.	2.6	-3.2	33.4	141.8	1404.0	1404.0
										374.	12.1	83.	83.	2.7	-3.5	30.6	133.3	1370.9	1370.9
										375.	12.5	86.	86.	1.2	-1.7	29.6	142.1	1236.9	1236.9
										375.	12.5	86.	86.	1.2	-1.7	29.6	142.1	1236.9	1236.9
										372.	12.5	78.	78.	0.8	-0.4	28.0	221.0	1581.8	1581.8
										375.	12.8	78.	78.	0.8	-0.4	28.0	221.0	1581.8	1581.8
										374.	13.0	83.	83.	1.0	-3.8	30.1	217.0	1772.0	1772.0
										375.	13.0	83.	83.	1.0	-3.8	30.1	217.0	1772.0	1772.0
										375.	13.3	88.	88.	1.3	-2.2	29.1	182.8	1628.0	1628.0
										374.	12.1	79.	79.	1.0	-2.8	28.3	158.8	1558.1	1558.1
										375.	12.1	79.	79.	1.0	-2.8	28.3	158.8	1558.1	1558.1
										374.	12.1	84.	84.	0.1	-2.7	28.5	158.8	1558.1	1558.1
										371.	12.4	83.	83.	0.1	-1.2	28.5	158.8	1558.1	1558.1
										372.	11.9	80.	80.	0.4	-1.3	27.5	158.8	1558.1	1558.1
										371.	11.9	85.	85.	0.3	-1.3	27.5	158.8	1558.1	1558.1
										371.	12.1	85.	85.	0.3	-1.3	27.5	158.8	1558.1	1558.1
										371.	12.3	78.	78.	0.1	-4.7	29.3	163.7	1558.1	1558.1
										373.	13.5	75.	75.	0.6	-4.7	29.3	163.7	1558.1	1558.1
										373.	13.2	75.	75.	0.2	-4.7	29.3	163.7	1558.1	1558.1
										374.	13.1	79.	79.	0.3	-4.2	29.9	182.8	1713.5	1713.5
										376.	13.4	80.	80.	0.4	-4.2	29.9	182.8	1713.5	1713.5
										376.	13.4	80.	80.	0.4	-4.2	29.9	182.8	1713.5	1713.5
										376.	13.4	80.	80.	0.4	-4.2	29.9	182.8	1713.5	1713.5
										378.	12.3	76.	76.	0.5	-4.0	32.0	161.4	1404.0	1404.0
										374.	12.3	76.	76.	0.5	-4.0	32.0	161.4	1404.0	1404.0
										367.	11.1	76.	76.	0.5	-4.0	32.0	161.4	1404.0	1404.0
										366.	10.3	73.	73.	1.1	-3.3	25.0	68.5	211.1	211.1